

# Service Manual

Radio

FM/AM/FM STEREO RADIO with  
FEATHERWEIGHT STEREO HEADPHONES

RF-433/©



## ■ SPECIFICATIONS

Frequency Range:	FM88~108MHz AM525~1610kHz	Dimensions:	70(Wide)×118(High)×26(Deep)mm (2- <sup>25</sup> / <sub>32</sub> "×4- <sup>21</sup> / <sub>32</sub> "×1- <sup>1</sup> / <sub>32</sub> " )
Intermediate Frequency:	FM10.7MHz AM455kHz	Weight:	120g (4.2 oz) Without Batteries
Sensitivity:	FM1.8 $\mu$ V (-3dB, Limit. Sens.) AM56.3 $\mu$ V/m for 1mW Output	Impedance:	Headphone Jack ..... 32 $\Omega$ ( $\phi$ 3.5)
Power Output:	60mW (30mW×2) Maximum	● Featherweight Stereo Headphones	
Batteries:	3V(Two "AAA" Size Penlight Batteries) (Panasonic UM-4 or equivalent)	Input:	10mW (Max. 50mW)
		Impedance:	24 $\Omega$
		Connection Cord:	90cm (35- <sup>7</sup> / <sub>16</sub> ")
		Weight:	52g (1.8 oz.) with cord

Weights and dimensions shown are approximate.

(Les poids et dimensions mentionnés sont approximatifs).

Specifications are subject to change without notice.

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DISASSEMBLY INSTRUCTIONS

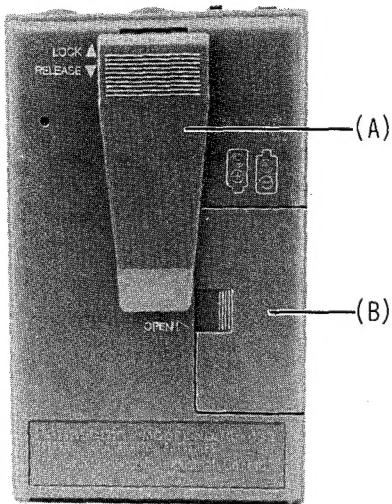


Fig. 1

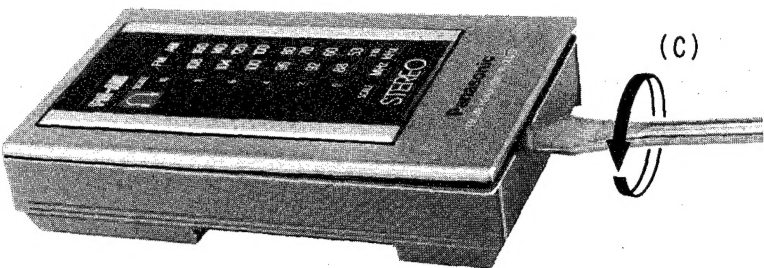


Fig. 2

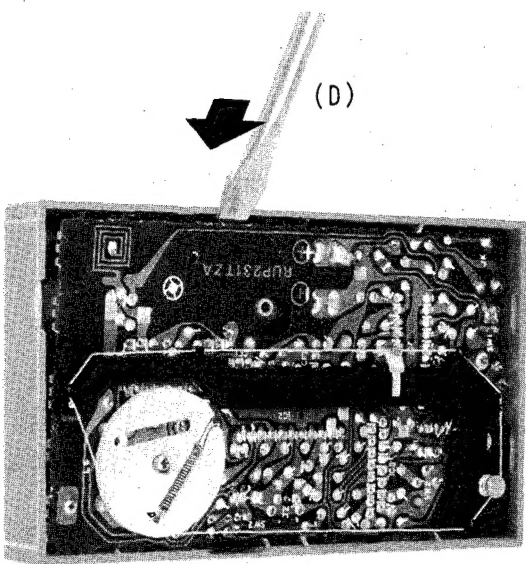


Fig. 3

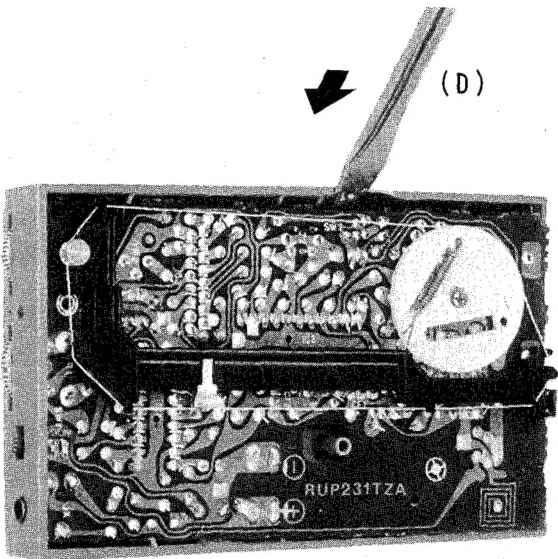


Fig. 4

Procedure	To remove—	Remove—	Shown in Fig—
1	Front Cabinet	Clip..... (A)×1	1
2		Battery Cover..... (B)×1	1
3		Front Cabinet..... (C)×1	2
4	Chassis	PC. Bord .....(D)×2	3, 4

MEASUREMENTS AND ADJUSTMENTS

■ ALIGNMENT INSTRUCTIONS

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT					
<b>Notes:</b> 1. Set volume control to maximum. 2. Set band switch to AM or FMST. 2. Set power switch to ON. 4. Set power source voltage to 3 volts DC. 5. Output of signal generator should be no higher than necessary to obtain an output reading.					
SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING [DISTANCE]	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
CONNECTIONS	FREQUENCY				
AM-IF & RF ALIGNMENT					
Fashion loop or several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400 Hz.	Point of non-interference. (on/about 600 kHz)	Output meter across voice coil.	T3 (AM 1st IFT)	Adjust for maximum output.
"	511 kHz	Tuning capacitor fully closed.	"	L5 (AM OSC Coil)	"
"	1650 kHz	Tuning capacitor fully open.	"	CT3 (AM OSC Trimmer)	"
"	550 kHz	Tune to signal.	"	(*1)L6 (AM ANT Coil)	Adjust for maximum output. Adjust L6 by moving coil bobbin along ferrite core.
"	1500 kHz	Tune to signal.	"	CT4 (AM ANT Trimmer)	Adjust for maximum output. Repeat steps (2)~(5)
(*1) Cement antenna bobbin with wax after completing alignment.					
FM-IF ALIGNMENT					
High side thru. 0.001 $\mu$ F to point ▼ Negative side to point ▼	10.7 MHz	Point of non-interference. (on/about 90 MHz).	Connect vert. amp. of scope to point ▼, Negative side to point ▼.	T1 (FM 1st IFT)	Adjust for maximum amplitude. (Refer to fig. 5).
"	"	"	"	T2 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 6).
FM-RF ALIGNMENT					
Connect point ▼ through FM dummy antenna Negative side to point ▼ (Refer to fig. 7.)	86.2 MHz	Tuning capacitor fully closed.	Output meter across voice coil.	L4 (FM OSC Coil)	(*2)Adjust for maximum output.
"	109.3 MHz	Tuning capacitor fully open.	"	CT2 (FM OSC Trimmer)	"
"	90 MHz	Tune to signal.	"	L3 (FM ANT Coil)	"
"	106 MHz	Tune to signal.	"	CT1 (FM ANT Trimmer)	Adjust for maximum output. Repeat steps (8)~(11).
(*2) Three output responses will be present; proper tuning is the center frequency.					

■ SEPARATION ALIGNMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATON	REMARKS
Adjustment of pilot signal.	90 MHz, 60 dB	▼···(+)side ▼···(-)side	VR <sub>2</sub>	19 kHz	Adjust VR <sub>2</sub> for 19 kHz (±150Hz) reading on electronics counter.

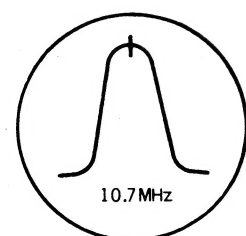


Fig. 5

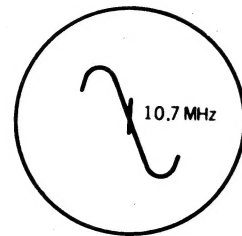


Fig. 6

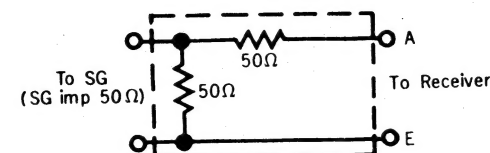


Fig. 7

■ ALIGNMENT POINTS

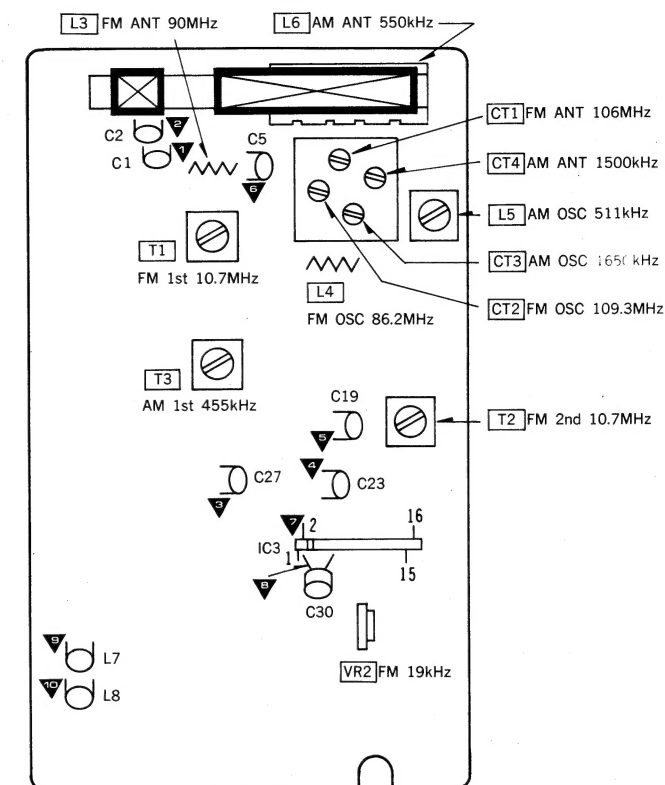


Fig. 8

DIAL THREADING

DIAL CORD LENGTH: 20.1cm (7-59/64")

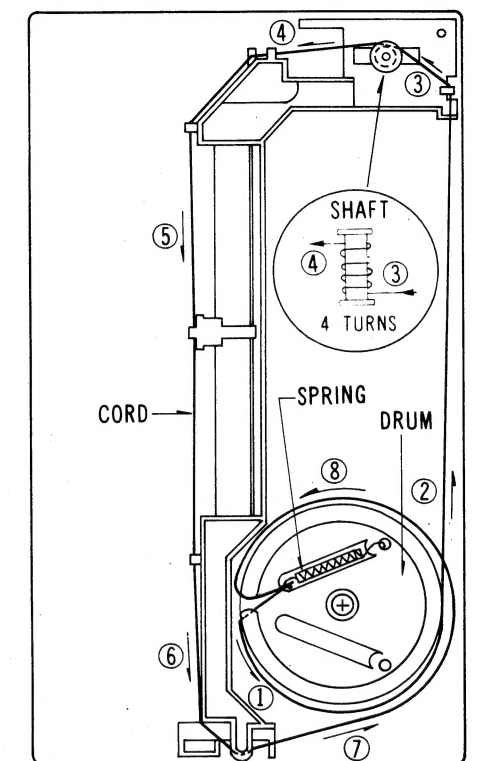


Fig. 9

PACKING MATERIALS

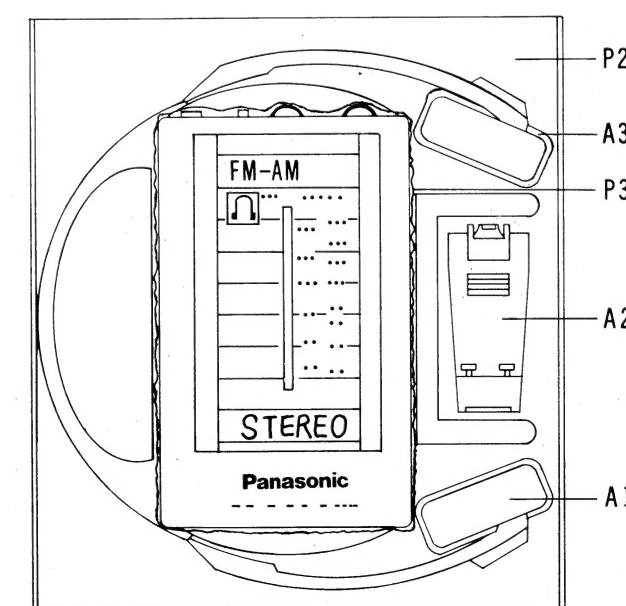
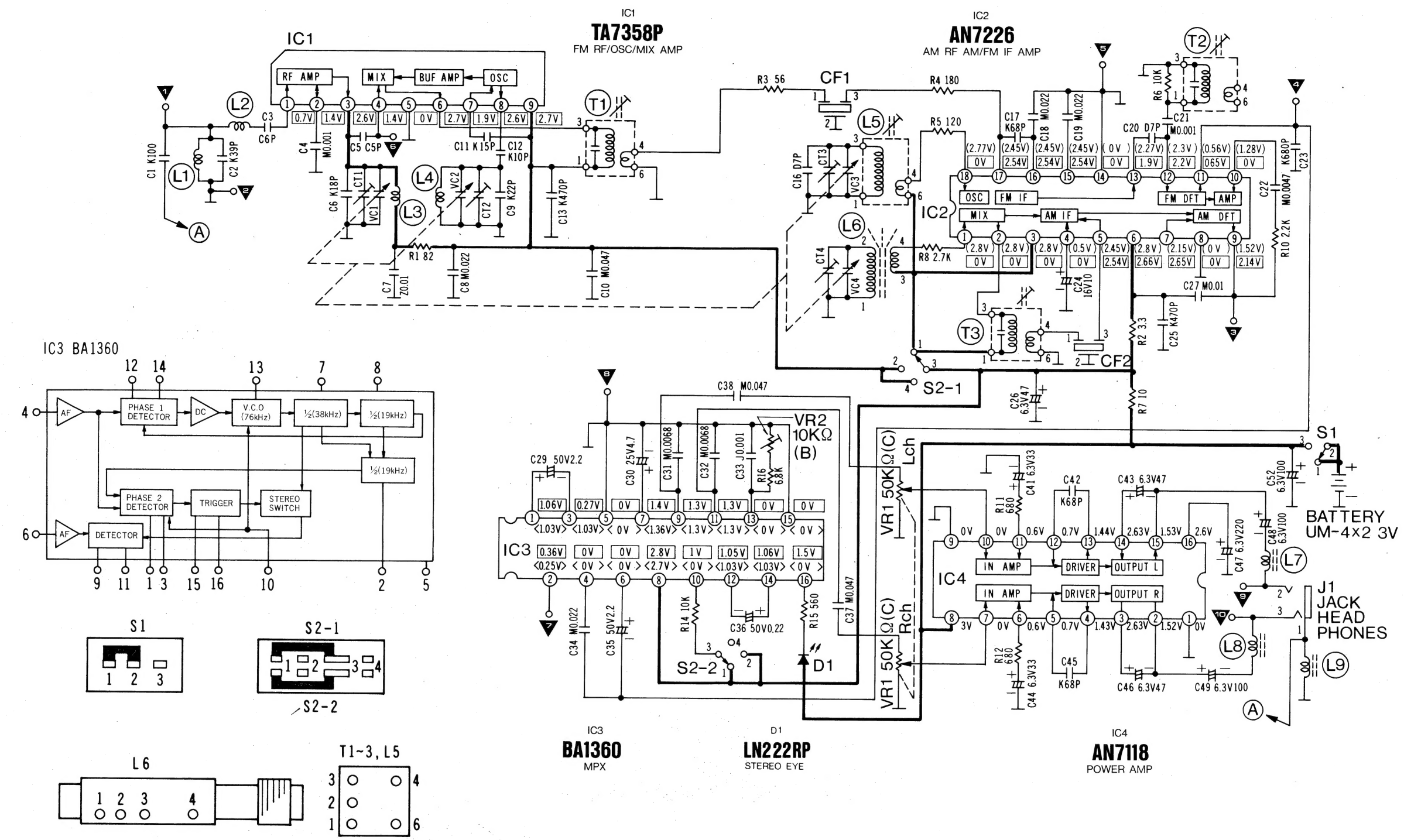


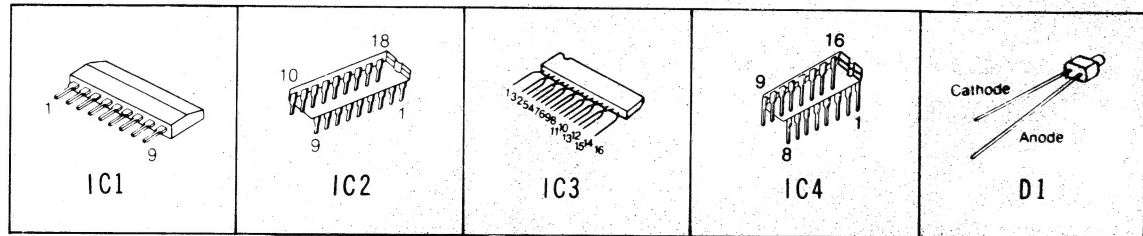
Fig. 10

SCHEMATIC DIAGRAM MODEL RF-433/©

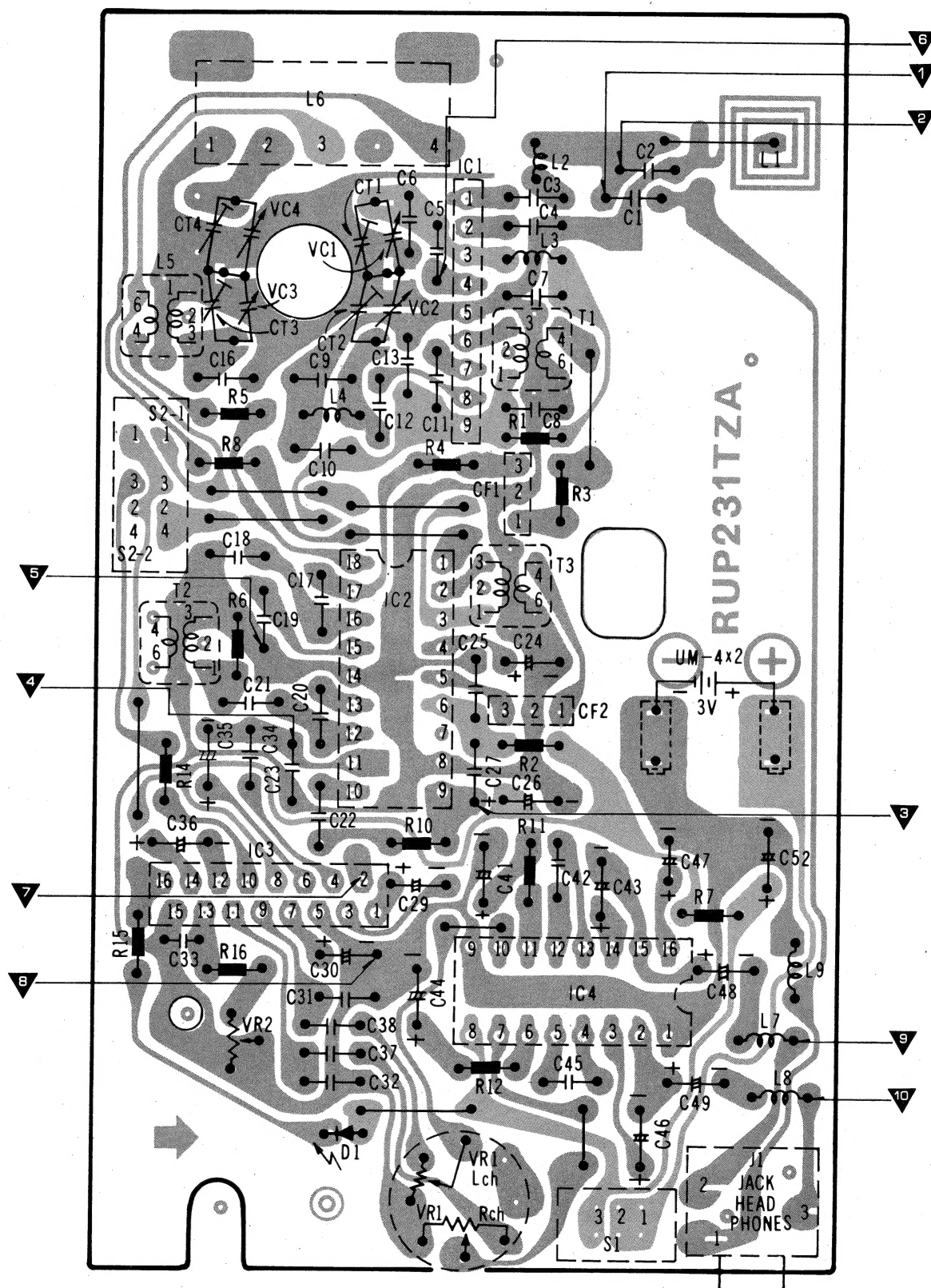


Notes:

- 1. S1: Power switch in "OFF" position.
- 2. S2-1 ~ 2-2: Band switch in "AM" position. (1.....AM, 2.....FM, 3.....FM ST.)
- 3. DC Voltage measurements are taken with electronics voltmeter based on negative terminal of Battery. (.....).....FM position, (.....).....AM position. < >.....FM ST. position
- 4. Battery Current no signal ..... 10mA  
Maximum output ..... 30mA
- 5. VR1 ..... Volume Control  
VR2 ..... VCO Adjustment
- 6. (.....) + (B) Voltage Line.
- 7. The mark (▼) Shows test point. e.g. ▼.....Test point 1.



# CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM MODEL RF-433/©



CABINET AND ELECTRICAL PARTS LOCATION



Fig. 11

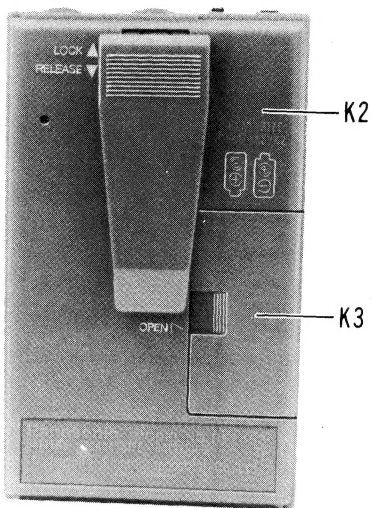


Fig. 12

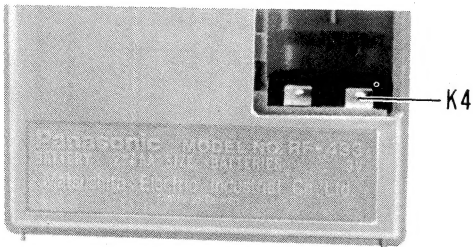


Fig. 13

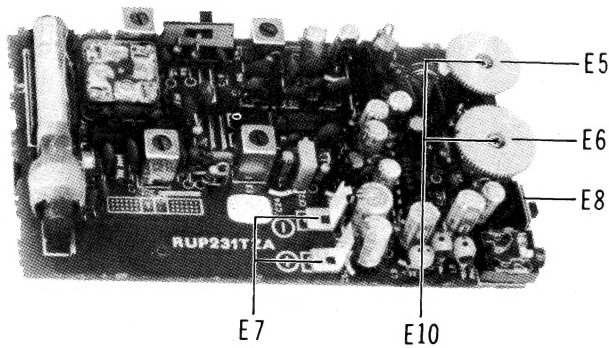


Fig. 14

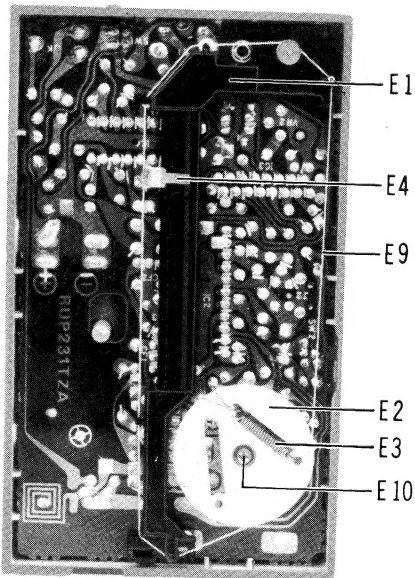



Fig. 15

■ REPLACEMENT PARTS LIST ..... Model RF-433/©  
(TD84110161C1)

NOTES:				
1. Important safety notice				
Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.				
2. The S mark is service standard parts and may differ from production parts.				
Ref. No.	Parts No.	Part Name & Description	Per Set	Remarks T: TAMACO
<b>INTEGRATED CIRCUIT TRANSISTOR AND DIODES</b>				
IC1	RVITA7358P	IC	1	
IC2	AN7226	IC	1	
IC3	RVIBA1360	IC	1	
IC4	AN7118	IC	1	T
D1	LN222RP	LED	1	
<b>COILS AND TRANSFORMERS</b>				
L3	RLO4Y15	Antenna Coil, FM	1	T
L4	RLO4Y19	Oscillator Coil, FM	1	T
L5	RLO2B87	Oscillator Coil, AM	1	T
L6	RLF2L21	Antenna Coil, AM	1	T
T1	RLI4B156	IFT, FM	1	T
T2	RLI4B154	IFT, FM	1	T
T3	RLI2B215	IFT, AM	1	T
<b>VARIABLE RESISTORS</b>				
VR1	RVV2HIC54	Variable Resistor 50KΩ (C)/Volume Control	1	T
VR2	RVNAC14B2	Variable Resistor, 10KΩ (B)	1	T
<b>VARIABLE CAPACITOR</b>				
VCI-4	RCV4LC4VN	Tuning Capacitor W/Trimmer Capacitor (CT1-4)	1	T

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks T: TAMACO
<b>CERAMIC FILTERS</b>				
CF1	RVFSFE107MAZ	Ceramic Filter	1	T
CF2	RVFSFU455B	Ceramic Filter	1	T
<b>SWITCHES</b>				
S1	RSS2B54Z	Switch, Power	1	T
S2	RSS3B35Z	Switch, Band(FM ST/FM/AM)	1	T
<b>JACK</b>				
J1	RJJD26Z	Jack, Headphones	1	
<b>RESISTORS (Value is in OHMS)</b>				
R1	ERD25FJ820	82 1/4W Carbon	1	S
R2	ERD25FJ3R3	3.3 1/4W Carbon	1	S
R3	ERD25FJ560	56 1/4W Carbon	1	S
R4	ERD25FJ181	180 1/4W Carbon	1	S
R5	ERD25FJ121	120 1/4W Carbon	1	S
R6	ERD25FJ103	10K 1/4W Carbon	1	S
R7	ERD25FJ100	10 1/4W Carbon	1	S
R8	ERD25FJ272	2.7K 1/4W Carbon	1	S
R10	ERD25FJ222	2.2K 1/4W Carbon	1	S
R11, 12	ERD25FJ681	680 1/4W Carbon	2	S
R14	ERD25FJ103	10K 1/4W Carbon	1	S
R15	ERD25FJ561	560 1/4W Carbon	1	S
R16	ERD25FJ682	6.8K 1/4W Carbon	1	S
<b>CAPACITORS (Value is in MICRO FARADS except P.P.=PICO FARADS)</b>				
C1	ECCD1H101K	100P 50V Ceramic	1	
C2	ECCD1H390KC	39P 50V Ceramic	1	
C3	ECCD1H060CC	6P 50V Ceramic	1	
C4	ECKD1H102MD	0.001 50V Ceramic	1	
C5	ECCD1H050CC	5P 50V Ceramic	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks T: TAMACO
<b>ELECTRICAL PARTS</b>				
E1	RZAF433MKT	Dial Chassis Assy	1	T
E2	RDD205TZ	Drum, Dial	1	T
E3	RDS206TZ	Spring, Drum	1	T
E4	RDP219TZ	Pointer, Dial	1	T
E5	RBT209TZ	Knob, Tuning	1	T
E6	RBT208YZ	Knob, Volume	1	T
E7	RJC214TZ	Terminal	2	T
E8	RGK206TZ	Ornament	1	T
E9	RZD203Y	Cord, Dial	1 Roll	T
E10	XSN17+4	Screw	3	
<b>ACCESSORIES</b>				
A1	RD9245MKT	Headphones	1	T
A2	RKH203TZ	Belt Clipper	1	T
A3	ME-139A	Sponge	1	T
<b>PACKING MATERIALS</b>				
P1	RPK264TZ	Gift Box (For U.S.A.)	1	T
P1	RPK268TZ	Gift Box (For CANADA)	1	T
P2	RPP245TZ	Polyethylene Cover	1	T
P3	RPN1182TZ	Pad	1	T
<b>PRINTED MATERIAL</b>				
Y1	RQX392TZ	Instruction Book (For Canada)	1	T

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks T: TAMACO
C6	ECCD1H180KC	18P 50V Ceramic	1	
C7	ECKD1H103MD	0.01 50V Ceramic	1	
C8	ECFVD223MD	0.022 25V Semi-conductor	1	
C9	ECCD1K220KC	22P 50 Ceramic	1	
C10	ECFVD473MD	0.047 25V Semi-conductor	1	
C11	ECCD1H150KC	15P 50V Ceramic	1	
C12	ECCD1K100KC	10P 50V Ceramic	1	
C13	ECKD1H471KB	470P 50V Ceramic	1	
C16	ECCD1H070DC	7P 50V Ceramic	1	
C17	ECCD1H680K	68P 50V Ceramic	1	
C18, 19	ECFVD223MD	0.022 25V Semi-conductor	2	
C20	ECCD1H070DC	7P 50V Ceramic	1	
C21	ECKD1H102MD	0.001 50V Ceramic	1	
C22	ECFVD473MD	0.047 25V Semi-conductor	1	
C23	ECKD1H681KB	680P 50V Ceramic	1	S
C24	ECEA1HS100	10 50V Electrolytic	1	
C25	ECKD1H471KB	470P 50V Ceramic	1	S
C26	ECEA1AS101	100 10V Electrolytic	1	
C27	ECKD1H103ZF	0.01 50V Ceramic	1	S
C29	ECEA502R2	2.2 50V Electrolytic	1	S
C30	ECEA2524R7	4.7 25V Electrolytic	1	S
C31, 32	ECFVD103MD	0.01 25V Semi-conductor	2	
C33	ECQS-05102JZ	0.001 50V Polyester	1	
C34	ECFVD223MD	0.022 25V Semi-conductor	1	
C35	ECEA502R2	2.2 50V Electrolytic	1	S
C36	ECEA502R22	0.022 50V Electrolytic	1	S
C37, 38	ECFVD473MD	0.047 25V Semi-conductor	2	
C41	ECEA1CS330	33 16V Electrolytic	1	S
C42	ECCD1H680K	68P 50V Ceramic	1	
C43	ECEA1AS470	47 10V Electrolytic	1	S
C44	ECEA1CS330	33 33V Electrolytic	1	S
C45	ECCD1H680K	68P 50V Ceramic	1	S
C46	ECEA1AS470	47 10V Electrolytic	1	S
C47	ECEA1AS221	220 10V Electrolytic	1	S
C48, 49, 52	ECEA1AS101	100 10V Electrolytic	3	S
<b>CABINET PARTS</b>				
K1	RKM220TZ	Front Cabinet	1	T
K2	RKF221TZ	Rear Cabinet	1	T
K3	RKK207TZ	Battery Cover	1	T
K4	RJC215TZ	Terminal	1	T